MDOT

MICHIGAN DEPARTMENT OF TRANSPORTATION

State Long-Range Transportation Plan 2005-2030

Aviation Technical Report

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The Michigan Department of Transportation

November 17, 2006

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MICHIGAN LONG RANGE TRANSPORTATION PLAN

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Chapter 1. Introduction

The purpose of this report is to provide an overview of how the Michigan airport system operates. This overview emphasizes that general aviation and commercial aviation affects local economies, demographics and business locations.

Chapter 2. Existing System

2.1 A Systemwide Description

Michigan's aviation system in 2005 served over 40 million passengers on scheduled air carrier aircraft at 17 commercial service airports with linkage to the global airline transportation system. Over 3.5 million operations (takeoffs and landings) were made at Michigan's 236 public-use airports in 2005. As emphasized by the $60.4 billion in goods exported internationally in 2004, Michigan's commerce depends upon a quality multi-modal transportation system. Aviation is an important element of that system, transporting both people and goods quickly, safely, and efficiently. Additionally, Michigan's extensive tourism industry requires efficient air transportation to support development. Focal points of the Aviation Programs are to:

- Improve accessibility of Michigan's commercial, business, industrial, and recreational areas;
- Facilitate development and improvement of scheduled passenger and freight service facilities at air carrier airports which enable and encourage personal, recreational, and business travel to Michigan locations and meet community air travel needs; and
- Preserve and improve Michigan's aviation infrastructure, including both airport facilities and services.

As of 2005, there were 236 public-use airport facilities throughout Michigan. Not included in this count were private-use airfields, seaplane bases, private-use heliports, and military facilities, although joint use public/military facilities are included in the *2000 Michigan Airport System Plan* (*MASP 2000)*. Of the 236 public-use airports, 130 or 55.1 percent were publicly-owned, with the balance, 106 or 44.9 percent privately-owned. Although both types of facilities are open to the public, ownership plays an important role in at least two ways. First, publicly-owned airports tend to continue functioning as airports over the long haul with a sense of stability that is important to users of the airports. They are more readily accepted as a community asset. Privately-owned airports are far more likely to drift into and out of public use and consequently are less reliable as a long-term transportation resource. Additionally, privately-owned airports are often under extreme pressure from developers and others for conversion into non-aviation uses such as housing or commercial developments. Once converted to another use, the likelihood of replacing one airport with another is remote at best.

Only two of Michigan's 83 counties, Baraga and Keweenaw, both located in the Upper Peninsula, are without public-use airports. One additional county, Missaukee, does not have a publicly-owned airport. Clinton County, with 12, has more public-use airports than any other county.

Figure 1: Public Use Airports in Michigan

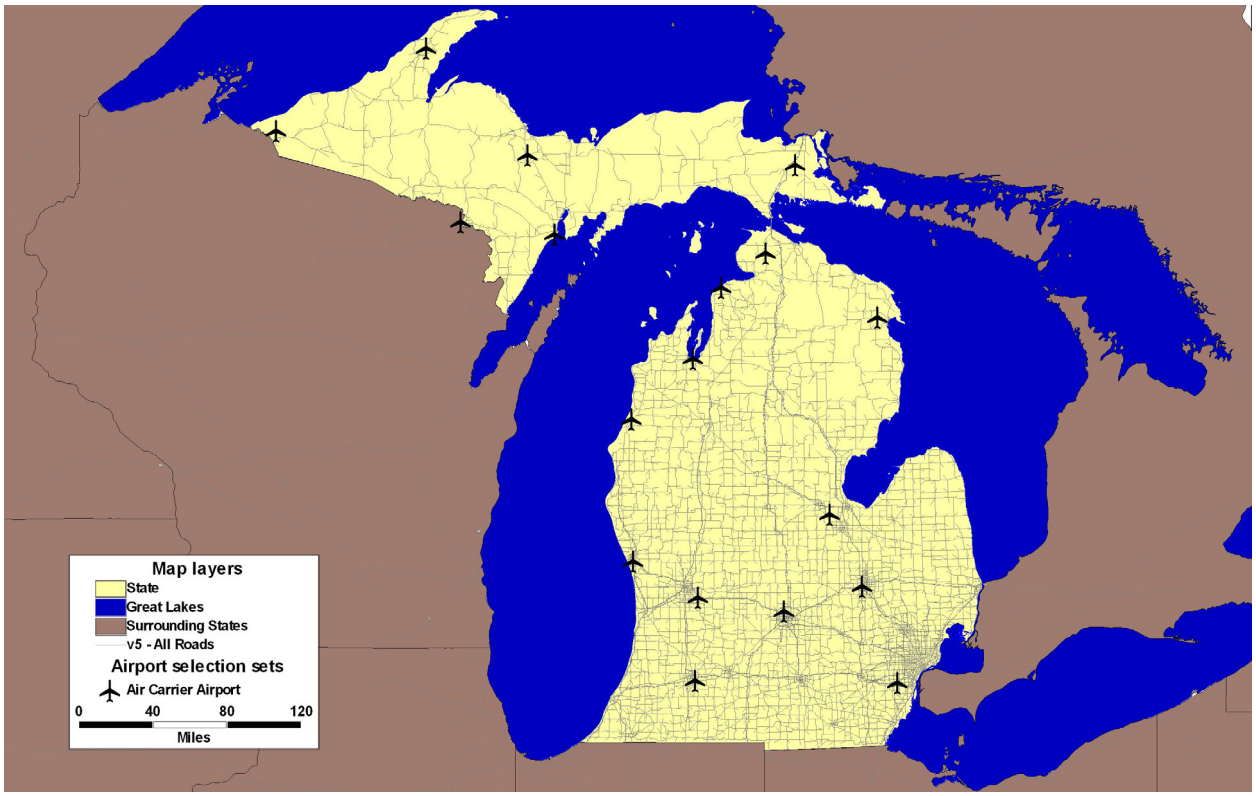
2.2 Services Provided

For Michigan travel and shipping consumers, there are several types of aviation services available to facilitate safe, secure, efficient and effective air transport. The airline system provides scheduled passenger services at 17 commercial service airports (see **Appendix A)**. The majority of these airports are served by regional airlines such as Mesaba, Midwest Connect and American Eagle, which provide connecting service to major airlines operating at large airports where access to the global airline transportation system is available. These regional air carriers typically operate 19 to 70-seat aircraft, which are better suited to smaller markets. The increasing use of regional jet aircraft, such as those used by Mesaba, Northwest Airlink and others, serve the smaller regional airports and have a seating capacity of 35 to 70 seats. Recently, two major air carriers in Michigan, Northwest Airlines and Delta Air Lines, have filed for bankruptcy, as have certain of their regional service providers that are subsidiaries. While

the scope of the impact of these filings has yet to be known, the impact on commercial air service in Michigan could be severe.

At an 18th airport, Charlevoix Municipal Airport, scheduled commercial air service is provided by an air carrier utilizing aircraft seating nine passengers. This scheduled service operates only between Charlevoix and Beaver Island, Michigan.

Figure 2: Airports with Commercial Service



In addition to scheduled airline service, several operators provide on-demand or "charter" passenger and cargo transportation. While these operators are based at various locations throughout Michigan, these services are available at any of Michigan's public-use airports and may be accomplished with a variety of aircraft designed to suit passenger or shipper needs.

The total amount of air cargo moved through Michigan airports in 2005 exceeded 259.9 million pounds. Air cargo moves via the cargo compartments of passenger aircraft, commercial aviation, cargo-specific carriers, and certain types of general aviation aircraft. Air cargo includes all types of goods from auto parts needed for just in time delivery, to produce, flowers, computer parts, US Mail, as well as commercial package expediting services such as UPS, FedEx and others. As online purchasing continues to grow in popularity, the air cargo industry will play a vital role in meeting consumer demand. Air cargo service providers at Detroit Willow Run Airport and Oakland County International Airport (Pontiac), offer cargo services where no scheduled passenger airline services are available.

2.3 Navigational Aid Status

MDOT recognizes the importance of enhancing aviation safety by providing an *All-Weather Airport Access Plan*. Additionally, this plan supports the existing aviation industry and stimulates the growth of aviation by making airports more cost-effective to potential business users. Cities and counties benefit directly and indirectly from air transportation through jobs, tourism dollars, and the relocation and growth of small and medium-sized industries. These

industries rely on convenient, all-weather access to airports for business, and to serve distant markets. During periods of low clouds and reduced visibility, an airport can only be used with the aid of instruments, which allow flight through these poor weather conditions. By using Instrument Flight Rules (IFR), a pilot can fly an aircraft safely when ceiling and visibility limits do not allow flight by visual means. This enables the pilot to descend to minimum safe altitudes and allows the pilot to see the runway and land safely.

The precision of the navigational landing aids (in the cockpit, on the ground, or in space) determines the minimum altitude and visibility a pilot can safely encounter and still see the runway to land. The higher these minimums, the more frequently a pilot has to divert to an alternate airport during periods of adverse weather conditions. An airport's utility to the business community, as well as other users, is enhanced by increasing the precision of the navigational landing aids available. Access to an airport having navigational aids is more reliable and efficient, saving time and money for business and other aircraft.

The following goals and objectives have been defined as a framework for this plan. All goals and objectives have been established considering recommendations from the *MASP 2000*.

- Provide pilots with real time aviation weather observations at the airport for pre-flight planning, and while airborne, to enhance the safety of flight operations;
- Maximize the development of standard instrument approach procedures to increase the accessibility to more airports during less-than-ideal weather periods;
- Develop a data communications network to permit aviation weather data sharing and dissemination; and
- Establish two-way communications between aircraft and FAA facilities.

All recommendations for this plan are based on criteria described under the plan guidelines. Local sponsor cost-sharing is required for project implementation. Periodic reviews of goals and objectives are completed to maintain plan effectiveness and focus.

Chapter 3. State Policy and Plans

There are numerous state policies and plans that address airports and aviation services in the state. The following section highlights the key policies and plans.

3.1 State Aeronautics Code and Michigan Aeronautics Commission Policy

The authorities, responsibilities, and functions of the Michigan Aeronautics Commission (Aeronautics Commission or "MAC") and MDOT (specifically, the aviation portion of MDOT), are found in the Aeronautics Code of the state of Michigan, Act 237, Public Act of 1945. The legal basis for all is found in Michigan laws relating to aviation, MCL 259.1-.823 and Rules

R259.201-.399. In addition, standards specified in the Code of Federal Regulations, CFR 14, are the foundation upon which all aviation controls and services are developed.

There are several portions within this act that provide the legal requirements for airport programs; these are highlighted below.

Sec. 259.51 MCLA states the Aeronautics Commission shall have general supervision over aeronautics within the state. Sec. 259.135 MCLA provides that no political subdivision of this state, whether acting alone or jointly with another political subdivision or with the state, shall submit any project application under the provisions of the Federal Airport Act of Congress to the federal government unless the project and the project application have first been approved by the Aeronautics Commission.

Sec. 259.251-.255 MCLA, Airport Loan Act, provides for funding and the establishment of a revolving loan fund for assisting local units of government in airport development to be administered by the Michigan Aeronautics Commission.

Sec. 259.401 and .402 MCLA, Aeronautical Planning Development, provides for funding and expenditures of these funds for planning, surveys and engineering services in the development of airports and landing fields within the state. These, too, are administered by the Aeronautics Commission.

Sec. 259.431-.464 MCLA, known as the Airport Zoning Act, provides for airport height zoning and land use zoning for the protection of public health and safety, and for the general welfare in vicinities surrounding airports. Sec. 259.431-.493 MCLA, known as the Tall Structures Act promotes the safety, welfare and protection of persons and property in the air and on the ground by regulating the height, location, and visual identification characteristics of certain structures and provide penalties for violation of the provision of this act.

The Aeronautics Commission's functions are the safe development of aviation in Michigan, and in concert with federal and local governments, development and maintenance of safe and cost-effective facilities that will serve the needs of commercial and private air users. In addition, the Commission undertakes efforts to improve the accessibility of Michigan communities by facilitating retention and development of commercial passenger and freight services.

Programs and activities provide for the protection and promotion of safety; effecting uniform laws relating to development and regulation of aeronautics; developing and implementing aeronautical rules and regulations; developing a statewide system of airports; developing and implementing programs to improve commercial passenger and cargo service; developing and implementing methods to ensure the future of Michigan's airport system; minimizing the loss of open-to-the-public airports; elimination of costly and unnecessary duplication of functions; coordinating activities and programs with federal authorities; all to be done to further the public interest and aeronautical progress within the state of Michigan.

The programs of the Commission are carried out by MDOT's aviation divisions. Overall administration, facilitation of aviation programs, handling of budgetary and legislative matters, development and implementation of the Air Service Program and All-Weather Airport Access Program, and primary support for Aeronautics Commission activities are undertaken by the

aviation divisions. MDOT's aviation divisions also administer and provide project management for the programming, planning, design, construction, and safety evaluations of airports throughout Michigan.

3.2 The Michigan Airport System Plan (MASP 2000) Policy

MASP 2000 documents the planning process that identified the aviation role of public-use airports in Michigan through the year 2000. *MASP 2000* presents the results of a system planning process that was aligned with the goals and objectives of *MDOT's State Long-Range Plan*. The *MASP 2000* supports programming decisions and is useful in evaluating programming actions related to airport system and airport facility deficiencies.

Among the key functions of the *MASP 2000* is, from a state perspective, identifying those airports that can best respond to state goals and objectives. To this end, all airports, following a rigorous analytical process, were assigned to one of three tiers based on their contribution to state goals. Tier 1 airports respond to critical/essential state airport system goals. These airports should be developed to their full and appropriate level. Tier 2 airports complement the essential/critical state airport system and/or respond to local community needs. Focus at these airports is on maintaining infrastructure with a lesser emphasis on facility expansion. Tier 3 airports duplicate services provided by other airports and/or respond to specific needs of individual and/or small businesses.

The intent of the programs is to encourage, foster and participate with political subdivisions and private airport owners whose airports are open to the public within the state. These programs wish to provide a balanced, safe, statewide system of airports to enhance air transportation and the commerce of the state. They should implement the State Airport System Plan including the preservation of the existing system and expansion to meet aviation demands. The State Aviation Development Program is closely tied to the programs of individual counties and municipalities that own and operate airports, as well as airports privately-owned but open to the public. The public bodies and private entities, which own airports, are known as "airport sponsors." (MDOT owns four airports: Houghton Lake State, Linden Price's, Plymouth Mettetal and Romeo.) The activities and services are prioritized to be able to return to Michigan the maximum federal dollars to meet airport needs. MDOT and the airport sponsor provide state and local funds, respectively, to capture federal funding for the specific projects.

MDOT has been designated as a participant in FAA's State Block Grant Program. Under this program, the state receives federal block grant monies for airport development projects for non-primary airports in the state. The program allows the state to use innovative ideas in administering federal grant funds.

MDOT Airports Division maintains and updates a five-year funding program. The program provides a view of funding needed in the future at each of the public-use airports that participates in federal or state funding programs. Any capital improvement project involving state or federal funds must be environmentally cleared. MDOT has been appointed by FAA to act as lead agency for environmental review, which entails reviewing and coordinating environmental documentation on all airport projects. In addition, there is coordination of

Disadvantaged Business Enterprise (DBE) requirements with airport sponsors, other department bureaus and FAA. This involves developing DBE programs for sponsors involved with federal and state funded projects. In addition, an updated as-built construction file is maintained on all capital improvement projects funded with state or federal funds.

Safety programs provide for the regulation and promotion of aviation in Michigan. These programs enhance the safe and cost-effective operation of the state's aviation infrastructure. Through safety programs, data is collected on many safety and operational areas. This information is reported to FAA headquarters for inclusion in the national aviation databases. MDOT conducts several educational workshops in cooperation with other statewide locations to inform the state's youth about aviation careers. MDOT staff also produces professional quality safety programs for presentation to aviation groups statewide. These programs are conducted in cooperation with the FAA and local aviation organizations. On average, over 4,000 people annually attend safety seminars.

3.3 All-Weather Airport Access Plan

MDOT promotes aviation through the development and implementation of an All-Weather Airport Access Program. This program includes supplementing federal aeronautical navigation aids (navaids), to provide statewide capability for enroute all-weather navigation at and above 1,000-feet above the ground. The Federal program of navaids primarily focuses on the air service airports and those general aviation airports that have greater numbers of commercial traffic. The state program enhances the safety and efficiency of enroute all-weather navigation by providing equipment and services throughout the state at all types of airports. In addition, this program provides navigation, weather information and enhanced communication necessary for safe all-weather information for pilots and aviation users not served by FAA systems. Automated weather observation systems provide real-time, accurate and current weather information for pilots and the aviation community. They also benefit the local community that each system serves by providing that information to schools and the agricultural industry. Ground Communication Outlets provide pilots a direct link to air traffic facilities to indicate their intentions and to obtain necessary flight instructions, without leaving the cockpit of their aircraft. The general public benefits from this program through a safer and more efficient air transportation network.

Of the 236 public-use airports, 85 are Tier 1 airports and 23 are Tier 2 airports. Fifty-nine of these airports have achieved all-weather accessibility. This status is achieved when an airport is able to provide the following four services to pilots free of any additional charges:

- Three-dimensional (3-D) precision instrument approach procedure. (The ultimate goal is a 3-D approach. However, the 3-D GPS program currently being developed by the FAA is experiencing delays, so for the present time, a published instrument approach satisfies this service).
- National Weather Service (NWS) and Federal Aviation Administration (FAA)-approved current weather observations;

- Weather dissemination capability; and
- Remote ground communications with Air Traffic Control.

Table 1 presents information on Michigan's all-weather airports.

Table 1: Percentage of Airports All-Weather Accessible

Year	*Total # of Airports*	*Airports Eligible*	*Airports All-Weather Accessible*	*% All-Weather Accessible*
1999	238	96	43	44.7%
2000	235	94	45	47.8%
2001	235	95	52	54.7%
2002	239	95	52	54.7%
2003	237	96	53	55.2%
2004	234	96	58	60.4%
2005	236	96	59	60.8%

Source: *All-Weather Airport Access Plan*

It is the goal of this plan to achieve all-weather accessibility at 100 percent of the Tier 1 and Tier 2 airports; however, that is not practical. To do that, several airports would need to incur fiscal burdens, which they may not be able to handle. These burdens could be due to the need for land purchase, tree clearing and/or the local share for a weather package. In addition, there is the possibility of certain Tier 1 or Tier 2 airports not wanting to be all-weather accessible for their own reasons. Therefore, it was the goal to achieve all-weather accessibility at 73 (76 %) of the Tier 1 and two Tier 2 airports sometime during the year 2005, and to reach 77 airports (80 %) by the year 2008. Due to recent and current budgetary shortfalls, these goals will not be reached. They will be revised once consistent sources of funding are restored.

This current plan, which has been approved by the Michigan Aeronautics Commission, will be used for planning and implementation through 2007. Annually, a specific listing of airports proposed for equipment installation will be submitted to the Michigan Aeronautics Commission for approval. Please see **Appendix B**, which lists all Navaids, GPS and All-Weather Observation Systems in the state.

Achievement of goals and objectives is dependent upon the ability to utilize technologically advanced equipment as the industry evolves. The absence of this program or inadequate funding would mean degradation of safe and effective all-weather access by the worldwide air transportation industry to all the major population centers of Michigan. This would likely result in stagnation or regression of economic development in out-state areas.

3.4 Policy Plan for Michigan Air Service

Recognizing that air service affects local economies, demographics, and business locations, the Policy Plan for Michigan Air Service (PPMAS) defines the public role in this highly visible form of public transportation operated by the private sector for profit.

The following are considerations that were given during the development of the Policy Plan:

- Ensure the appropriate distribution of air service to support and promote economic development statewide;
- Ensure the appropriate distribution of air service to support quality of life for Michigan residents and visitors by providing access to the national air transportation system;
- Match a community's air service to the level, which it can profitably support.

The PPMAS identifies those areas where MDOT has an opportunity to positively affect the provision and use of air services throughout Michigan.

PPMAS, adopted by the Michigan Aeronautics Commission in March 2001, is used by MDOT to focus the Air Service Program, as appropriate. The policy plan sets the stage for identifying and implementing those initiatives that will further enhance the availability and use of air services throughout Michigan. Policy plan goals addressing transportation services coordination, land use coordination, basic mobility, preservation, intermodalism, environment and aesthetics, strengthening the state's economy, and safety are presented in this report.

As an outcome of the PPMAS process, three overall policies have been established. These are as follows:

- The 17 Michigan airports having scheduled air passenger service with linkage to global services are geographically well situated and meet Michigan service needs within the service threshold of 60 minutes or less surface travel time without the need to add additional airports. This will be monitored to ensure that needed future demand at individual airports is reasonably accommodated.
- Although these 17 Michigan airports with scheduled air service are geographically well situated and meet Michigan service needs, some airports have deficiencies in meeting the policy plan consideration of matching the community's air service to the level, which it can profitably support. Therefore, steps will be taken through the Michigan Air Service Program and other appropriate sources to retain and/or improve quality air service at selected, existing airports to meet specific travel demands integral to business, tourism/convention, population center, and general population access needs.

To continue to meet PPMAS goals, scheduled air service at these 17 Michigan air service airports should be retained, working within available resources.

The PPMAS process utilized a team representing a wide variety of statewide and national organizations with an interest in Michigan air service. The steering committee identified air service issues from different perspectives including airlines, airports, regulatory and service needs. These were further examined from a customer's perspective by utilizing results from a 2000 airline passenger survey conducted at Michigan airports. The blending of these various perspectives resulted in the policy plan goals identified in the PPMAS report.

Chapter 4. Financing

4.1 Federal Funding Programs and Procedures

This section highlights the federal funding and procedures that are available to make improvements at eligible airports in the state.

The current federal funding program, known as the Airport Improvement Program (AIP), was established by the Airport and Airway Improvement Act of 1982. Since then, the AIP has been amended several times, most recently with the passage of the Vision 100-Century of Aviation Reauthorization Act of 2003. Funds obligated for the AIP are drawn from the Airport and Airway Trust Fund that is supported by user fees, fuel taxes, and other similar revenue sources.

Currently federal funds for airport capital improvement and airport development come from the FAA through enabling legislation (Vision 100, Century of Aviation Reauthorization Act) and appropriations legislation (Omnibus bill). The money comes from user fees (Airways and Airports Trust Fund) and general funds. The Airport and Airway Trust Fund created by the Airport and Airway Revenue Act of 1970, provides funding for the federal commitment to the nation's aviation system through several aviation-related excise taxes. Funding currently comes from tax collections related to passenger tickets, passenger flight segments, international arrivals/departures, cargo waybills, aviation fuels and frequent flyer mile awards through affinity programs from airline and non-airline sources such as credit card issuers.

Michigan's federal/state/local program combines the federal funds from the national Airport Improvement Program (AIP) section of Vision 100 with state and local funds. Only airports included in the National Plan of Integrated Airport Systems (NPIAS) are eligible for these funds; currently there are 94 Michigan airports in the NPIAS. All airports included in the NPIAS are eligible, if publicly-owned, for entitlement funds depending on the type of service that is provided at the airport. General aviation airports are eligible for $150,000 in Non-Primary Entitlement funds. If an airport has commercial service and has a minimum of 10,000 enplaned passengers annually, referred to as a primary airport, the minimum entitlement is $1,000,000. With the passage of Vision 100, for all but medium and large hub airports, the federal funds can be used to pay for up to 95 percent of a project's eligible costs. It is the intent of the state to provide these funds at the 95 percent federal, 2.5 percent state, and 2.5 percent local share for commercial service airports designated as primary. For general aviation it varies, although, currently, it is 80 percent federal, 17.5 percent state, and 2.5 percent local.

Federal funds are provided in several classifications. These classifications include the following:

- Primary Entitlements;
- Non-Primary Entitlements;
- Cargo Entitlements;
- Noise Discretionary;

- Ordinary Discretionary;
- Military Airports Program; and
- State Apportionment.

Primary Entitlements are provided to airports with commercial services that enplane 10,000 passengers or more. The minimum primary entitlement is currently $1,000,000 but may be more as the entitlement is determined by formula and rule.

Non-Primary Entitlements (NPE) are provided to other airports, mostly general aviation. The amount of the non-primary entitlement is $150,000 or less depending on the FAA Airport Capital Improvement Program listing. All Michigan airports eligible for NPE have been receiving $150,000 annually.

Cargo Entitlements are provided to airports that move at least a percentage of the nation's air cargo. This entitlement has recently grown from 3 percent of AIP to 3.5 percent. Only a few of Michigan's airports qualify for this entitlement. More information can be made available upon request.

There is a federal formula similar to what determines large, medium or small hubs.

Noise Discretionary funds are provided to airports that have a current Federal Part 150 Noise program. Currently only Detroit Metro and Oakland/Pontiac receive these funds although other airports have received them in the past. The total for noise discretionary projects must equal 34 percent of all FAA discretionary funds nationally.

Ordinary Discretionary funds are decided upon by FAA Headquarters with input from the FAA Great Lakes Region and Detroit Airports District Offices. Generally, these are high priority projects, which include runway safety area issues, runway incursions, Part 139 projects and runway pavement rehabilitation.

Military Airports Program provides discretionary funds to airports that have been converted from a military base during base realignment closings. Sawyer International, Chippewa County International and Oscoda–Wurtsmith have received or are receiving funds under this program.

State Apportionment funds are provided to Michigan to be used as the state sees fit at Non-Primary Airports. These funds are used to supplement the Non-Primary Entitlement funds and are used for other priority projects.

In addition to the federal programs, the state of Michigan also has several airport funding programs, including the following:

The State/Local program is a 50/50 program (50 percent state funds and 50 percent local funds) that is used to fund projects such as crack sealing and paint marking. It is limited to $150,000 in state funds per airport. All public-use airports are eligible for these funds but funding has been restricted to airports having or being willing to obtain a state general utility license.

The State/Local – Small Airports program is a 90/10 program that is used to fund projects that do not have a high federal priority but are important to the airport, and projects for which there are not enough federal funds available. Airports that are not eligible for federal funds but are

eligible for state funds may also participate in this program. The definition of a small airport is one that does not have 100-based aircraft and/or the airport has less than 10,000 annual commercial enplanements.

The Airport Loan Program is another source of funds for capital improvements at airports. The Airport Loan Program is provided by the Michigan Department of Transportation for use by publicly-owned airports. The general terms of the loan include a limit of $100,000 in an outstanding loan balance at any time, the loan must be paid back in 10 years, and the local sponsor must provide at least a 10 percent match for the loan amount. The interest rate for the Loan Program is determined annually by the Michigan Department of Treasury based upon effective interest rates on municipal and state borrowings for comparable terms and is 4.2 percent for all loans issued in 2006. Airport sponsors must apply to the Department of Treasury for approval to incur the proposed indebtedness, and MDOT is notified if the sponsor's request is approved. MDOT then requests approval from the Michigan Aeronautics Commission for issuance of the actual loan.

4.2 Essential Air Service (EAS)

Over two decades ago (1978), Congress deregulated the airline industry, phasing out the federal government's control over domestic fares and commercial service routes, allowing market forces to determine the price, quantity, and quality of service. Concerned that air service to some small communities would suffer in a deregulated environment, the Congress established the Essential Air Service (EAS) program as part of the Airline Deregulation Act of 1978.

The Act guaranteed that communities served by air carriers before deregulation would continue to receive a certain level of scheduled air service. In general, the act guaranteed continued service by authorizing the Civil Aeronautics Board, whose duties were later transferred to the US Department of Transportation (USDOT), to require carriers to continue providing basic levels of service at these communities.

If an air carrier could not continue that service without incurring a loss, USDOT could then use EAS funds to award that carrier, or another carrier willing to provide service, a subsidy. These federal subsidies are intended to cover the difference between a carrier's projected revenues and expenses and provide a minimum amount of profit.

As of April 1, 2006, air service is subsidized under the EAS program at four Michigan airports: Delta County (Escanaba), Manistee-Blacker (Manistee), Gogebic County (Ironwood) and Ford Airport (Iron Mountain). While no immediate changes are foreseen, continued EAS service is contingent upon federal funds being appropriated to the USDOT for this program.

4.3 Small Communities Air Service Development

On April 5, 2000, the Aviation Investment and Reform Act for the 21st Century (AIR-21) became public law, which, among other things, established a new pilot program designed to help smaller communities enhance their air service. Designated the Small Community Air Service Development Program (SCASD), it is structured to award up to 40 grants each year, though no

more than four may be within a single state. Program-wide funding levels have varied between $10 and $20 million annually, and are administered by the USDOT.

The core objective of the program is to secure enhancements that will be responsive to a community's commercial air transportation needs and whose benefits can be expected to continue after the initial expenditures.

To be eligible for a grant, the airport serving the community must be no larger than an Small Hub Airport (as defined by the FAA), have insufficient air carrier service, unreasonably high air fares, geographic diversity, or unique circumstances that will demonstrate the need for the program.

Michigan communities have enjoyed a good deal of success in securing SCASD awards from the USDOT as shown below in **Table 2**.

Table 2: SCASD Award by Fiscal Year

SCASD Award by Fiscal Year	
FY	***Airports***
2002	Houghton County ($80K), Pellston Regional of Emmet County ($80K)
2003	Muskegon County ($600K)
2004	Alpena County Regional ($583K), Kalamazoo ($500K), Sawyer International ($700K)
2005	Chippewa County International ($587K), Houghton County ($516K)

While future funding for this program is uncertain, it has proven its value as a mechanism for air service development in Michigan and at small airports throughout the country.

4.4 Other Federal Legislation

In accordance with legislation adopted by the US Congress, individual airports in the United States may assess a Passenger Facility Charge (PFC) against enplaning passengers. Airports may charge up to $4.50 per ticket under this program. Such PFCs are to be used by the airports to fund FAA-approved airport improvement projects. Once the FAA has approved an airport's PFC program, the legislation requires airlines and travel agents to collect PFCs from their passengers.

Chapter 5. State and Local Government Funding Assistance

In addition to federal funds, there are a variety of state and local funding sources that can be effectively leveraged to assist with airport capital development. These sources are highlighted below:

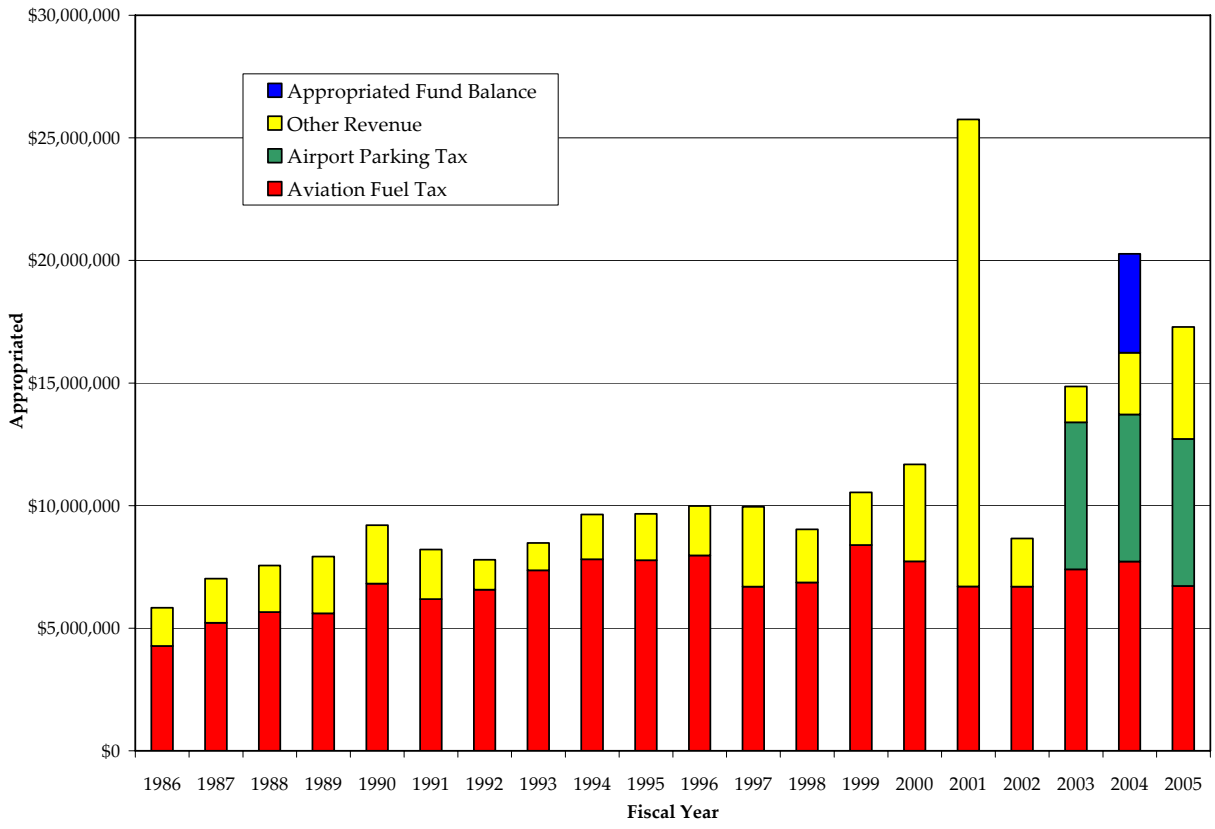
5.1 State Funds

The State Aeronautics Fund (SAF), established in Public Act 327 of 1945, is the state source of funds for capital projects at Michigan airports. The aviation fuel excise tax generates the greatest share of revenue. At $0.03 per gallon, the tax has not been increased since its inception. A refund of $0.015 per gallon is available to interstate commercial carriers operating scheduled service upon request to the Michigan Department of Treasury. Other sources of revenue to the SAF are licenses and permits, including aircraft registration fees, airport license fees, and temporary field permits, service fees, and other miscellaneous sources (interest earnings, sales of publications, flight school permits).

In 2002, in response to a reduction in SAF revenue, the Airport Safety and Protection (ASAP) Program was developed. The funding for this program of capital improvements comes from combining federal funds, local funds, and up to $60 million in state bonding (provided over five years). The plan calls for repayment of the bonds to be made from an earmark of Airport Parking Tax revenue. The SAF receives the first $6 million of tax levied on airport parking facilities in proximity to Detroit Metropolitan Wayne County Airport. The legislation requires that the funds be used exclusively for safety and security projects at state airports and debt service on the bonds sold.

A 20-year history of State Aeronautics Fund revenues, but excluding bond revenues, is shown in **Figure 3**.

Figure 3: Appropriations to State Aeronautics Fund



Source: Michigan Department of Transportation-MMTSB-Aviation Services Division

In 2001, $17 million of state general funds were appropriated for improvements at Wayne County Airports.

Revenue estimates as forecasted by the Michigan Department of Treasury for FY 2006 and 2007 are contained in **Table 3**.

Table 3: State Aeronautics Revenue Estimates FY 2006 and FY 2007 (thousands)

Aeronautics Fund	*Forecast FY 2006*	*Growth FY 2006*	*Forecast FY 2007*	*Growth FY 2007*
Aviation Fuel Tax	$6,900	2.7%	$7,000	1.4%
Interest Earned	$680	-11.9%	$680	0.0%
Local Agencies	$27,025	15.0%	$30,524	12.9%
Services	$461	15.0%	$489	6.2%
Licenses & Permits	$300	0.1%	$300	0.0%
Miscellaneous	$76	-97.5%	$69	-8.7%
Airport Parking Tax Transfer	$6,000	0.0%	$6,000	0.0%
Total Aeronautics	$41,441	1.7%	$45,062	8.7%

5.2 Local Funds

With few exceptions, all USDOT, FAA, and MDOT aviation programs mandate local funds be provided as a requirement to receiving state and/or federal funds for a project. (The USDOT Essential Air Service Program does not require local funding.) These local funds can come from many sources. Local government airport sponsors, airport authorities, other airport owners, airport user groups and business groups, such as chambers of commerce, are just some of the entities that can provide airports with local funds.

5.3 Maintain Service and Infrastructure

MDOT partners with many local governments to establish, maintain, and expand air service throughout Michigan. Through the Michigan Air Service Program, jet service was brought back to Traverse City through the program's carrier recruitment and retention section. MDOT partnered with the local community to cover any losses the airline would have for the first three years. Similar partnerships between MDOT and local communities have taken place at other airports with commercial air service.

With the recent downturn in air service nationwide, Michigan communities with air service have seen some reductions in service. MDOT and local communities have been striving to maintain local air service through Air Service Program marketing grants. These grants consist of state and local funds that target the local community in understanding the importance of local air service, and its positive impact on the local economy, and increasing its usage.

MDOT is responsible for licensing and inspecting each of the state's "open to the public" airports. Inspections are conducted in accordance with the State Aeronautics Code to ensure that licensing standards are met at each airport. In addition, MDOT's inspectors examine each facility for conditions and record this data for inclusion in the FAA's Airport Master Records program. These inspections provide some basis for condition analysis of the facilities at airports for both the state and federal agencies.

MDOT also plays a role in examining practices at each grant-obligated airport to help ensure compliance with the grant obligations in place at each airport.

Chapter 6. Obstacles to Effective Delivery

One of the primary concerns regarding the effective delivery of aviation services in the state is the continuance of adequate levels of federal and state funding. The primary source of airport development funding comes from the Federal Airport Improvement Program (AIP). In addition, various other federal and state programs are available. The following sections highlight possible impacts based on potential reduced levels of funding.

MDOT and the local airport sponsors have worked well together to cooperatively fund airport improvements and aviation projects to facilitate a strong statewide airport network with linkage to the national aviation system. Local airport sponsor support is essential for airport and air service development. Of Michigan's 236 public use airports, only four airports are owned by MDOT. Nearly all others are owned by a local unit of government (city, county or township), an airport authority, or by private entities, and two airports are owned by other state entities, i.e., the Michigan Department of Natural Resources and the Mackinac Island State Park Commission. The potential absence of that local support due to local funding limitations or incompatible plans and goals, would be an obstacle to MDOT's effective delivery of projects and programs.

The following sections highlight possible impacts based on potential reduced levels of funding.

6.1 Legislation and Funding Uncertainties

At all levels, funding available for aviation projects is threatened. The President's proposed fiscal year 2007 budget reduces the congressionally-approved allocation for airport improvement projects from $3.6 billion to $2.75 billion. When the level of approved federal funding falls below $3.2 billion, a number of programs are substantially affected. Possible impacts to the system are highlighted below:

- Minimum Primary entitlement funds would fall from $1 million to $650,000. This reduces funding to six Michigan airports. Primary entitlement funds at other primary airports would be reduced by 50 percent. This affects another six airports. Additionally, two airports may be affected based on a current review of their primary status.
- Michigan's largest airport, Detroit Metro, receives a "Letter of Intent (LOI)" issued by FAA, which identifies the amount of federal funding the airport can expect to receive in a fiscal year. Detroit Metro may be held harmless by the Letter of Intent (LOI) that would exist; however, once the LOI obligation has been honored Metro would also be affected by the federal funding reduction.
- The Non-Primary Entitlement (NPE) program would be eliminated. This currently provides $150,000 per year to all publicly-owned non-primary airports (mostly general

aviation airports) included in the NPIAS. This would affect 79 airports in Michigan. Projects that were considered eligible under the NPE programs such as construction of hangars, terminals and fuel systems would likely not be funded.

- State apportionment would be reduced from 20 percent to 18.5 percent. Once all of the formulas are applied without NPE dollars, the amount of discretionary funds available to Michigan would increase, but the overall (AIP) funds to the state would likely decrease.
- The amount of funds for Essential Air Service (EAS) available to Michigan airports would be cut by $1.6 million. Currently, four airports receive these funds. Furthermore, with the financial difficulties currently facing Northwest Airlines, it is possible they will seek an EAS subsidy at one or more of the small Michigan communities they serve. However, with reduced EAS funding, USDOT might be unable to provide subsidy to Northwest and a cessation of service to these communities could be likely.
- Under the president's proposed budget, the Small Community Air Service Development Program (SCASD) would not receive funding in FY 2007. In FY 2006, two Michigan airport applications were approved, totaling over $1 million.
- The Federal Contract Tower Cost-Share program would be eliminated. In Michigan, this would affect airports by shifting over $340,000 in costs from the FAA to the airport operator/county. Local officials indicate this would likely mean the closure of these important facilities.
- The current federal authorization for aviation programs and funding expires on September 30, 2007. Continuation of current programs and levels of funding are unknown at this time.

At the state level, aviation programs are funded by the State Aeronautics Fund, which is impacted by declining revenues. The largest of these is a tax on aviation fuels, which has not been increased in decades.

In addition, an airport parking tax (Detroit Metro only) provides funds to support the sale of bonds to undertake safety and protection projects at Michigan airports. The bonding authority lapses on September 30, 2007. Airport sponsors are largely local units of government and suffer financial obstacles as well.

The *Finance Technical Report* contains a complete discussion of aviation funding and its challenges.

6.2 Continuation of Key Aviation Services

The Michigan Department of Transportation delivers many services and support for commercial and general aviation in Michigan. The services and the obstacles to delivery include the following:

Airport Improvement Program: The Airport Improvement Program (AIP) provides federal grants to airports for capital development. Michigan is a block grant AIP state, which enables

MDOT to distribute AIP monies using the guidance of the MASP 2000. All 94 AIP eligible airports submit five-year plans for expansion, airside safety equipment and installation, and runway and taxiway improvements.

Obstacle to Delivery: The biggest obstacle to effective delivery of the AIP program is the inconsistency and year-to-year authorization of the AIP budget. Due to this manner of appropriating funds from the Aviation Trust Fund, there can be little long-term planning of the distribution of AIP monies beyond one to two years.

Air Service Program: The Michigan Air Service Program was initiated in 1987 as a result of former Governor James Blanchard's Air Service Task Force. This program has been used over ensuing years to:

- Help maintain commercial air service at Michigan airports;
- Promote the awareness and use of the airport's services; and
- Undertake small-scale projects aimed at improving airport facilities and operations, where no other funds are available.

In addition, MDOT undertakes studies of a regional or statewide nature, targeted towards eliminating impediments to service retention and identifying opportunities for improving commercial air service.

Obstacle to Delivery: The annual budget for this program has ranged between $1.5 million and $750,000. Unfortunately, due to decreased State Aeronautics Fund revenue, the FY 2006 program is funded at only $300,000. This program has decreased significantly from prior years, as it is neither a state nor federally mandated undertaking.

There are obstacles to delivery associated with the Air Service Program. For the carrier recruitment and retention activities, because of the exigencies of the current market for commercial aviation, retention of air service to small or underserved communities is difficult. For the entire Air Service Program, there are not sufficient funds to meet the demand for services.

Small Community Air Service Development Program (federal only): Under this program, the USDOT is authorized to award grants to up to 40 communities served by small hub or non-hub airports (as classified in 1997) that have demonstrated air service deficiencies or higher-than-average airfares.

Obstacle to Delivery: Michigan currently has three of the 40 grants awarded by the USDOT. While the VISION-100 bill authorizes $35 million to the USDOT SCASD program for each fiscal year through 2008, the various appropriations bills cut the size of the total grant program to $18,952,685 for 2005 and the president's proposed budget eliminates the program altogether.

Essential Air Service (federal only): The Essential Air Service (EAS) program was put into place to guarantee that small communities that were served by certificated air carriers before deregulation maintain a minimal level of scheduled air service. The department currently subsidizes commuter airlines to serve approximately 140 rural communities across the country that otherwise would not receive any scheduled air service.

Obstacle to Delivery: Because this is a federally funded program, it is subject to the vagaries of federal budget constraints and congressional trends, and major cuts are proposed as part of the president's budget.

Border Protection: There are a number of critical US Border Protection services that must be maintained to effectively serve the residents and businesses of the state and nation. These aviation-related services, provided by federal agencies, are outlined below**:**

- United States and Canadian Customs at Airports - All aircraft entering the United States must notify the Customs officer in charge of the airport of intended landing at least one hour prior to landing. Failure to notify Customs could result in a fine. Certain airports provide flight notification service which allows a pilot to notify Customs simply by including ADCUS (advise Customs) in the remarks section of the flight plan. Certain airports have been designated "user-fee airports" and are authorized to charge for costs associated with providing Customs service. User fees may range from $50 to $300 depending on the time of service. Pilots check with the Customs officer directly to determine exact fees.
- Airports of Entry - There are currently four airports that serve as Airports of Entry. Advance notice of arrival time must be furnished to Customs unless otherwise noted in the Michigan Airport Directory, US Customs or Canadian Customs publications. Notice to Customs officials may be included in the flight plan if filed in Canada, and the destination is an airport where flight notification service (ADCUS) is available.
- Landing Rights Airports - In addition to the advance notice required at Airports of Entry, Landing Rights Airports require the pilot in command to secure advance permission to land from US Customs. There are currently 11 such airports in Michigan. Unless otherwise noted in the Michigan Airport Directory, US Customs or Canadian Customs publications, one-hour advance notice is sufficient.

Obstacles to Delivery: Because this is a federally funded service, it is subject to the vagaries of federal budget constraints and congressional trends.

Private Industry Delivery of Service: Airline service is primarily controlled by decisions made by the air carriers. Essentially, carriers choose to operate when they believe they can make a profit. As a result, there is limited influence from DOT policy to these private industry decisions.

Obstacles to Delivery: MDOT has little influence or control of the supply side of airline service. Airlines provide the service to communities based upon many variables, the first of which is profit. The airlines will move their assets to other communities or regions where profits are larger. Due to this unique ability, many Michigan communities are at the mercy of the airline when it comes to providing service.

Many Michigan communities have witnessed significant changes in air service since 2001. Airlines have pulled out of certain communities which have been replaced (in many cases) by

smaller airlines with fewer connecting opportunities. Because smaller aircraft are less expensive to operate, many airlines are using smaller equipment at Michigan airports.

The current state of the airline industry, with many airlines in bankruptcy, is another factor that MDOT has little control over.

Chapter 7. The Impact of Aviation on Commerce and Trade

Michigan's 236 public-use airports represent a vital link in the state's transportation infrastructure. In 2000, the MASP 2000 was prepared by Michigan Department of Transportation staff. The plan affirmed the importance of airports on Michigan's economy and quality of life.

Several facts derived from the *MASP 2000* regarding the airport system's importance include the following:

- Approximately 10 percent of all transportation services purchased in Michigan are aviation-related, amounting to $2.7 billion annually;
- Households and governments spend approximately 36 percent of their transportation budgets on aviation, amounting to $4.3 billion annually; and
- For every million dollars spent in aviation construction in Michigan, 40 jobs are created directly and indirectly.

Airports are valuable assets to their communities. Whether large or small, an airport's value can be compared to that of an interstate highway interchange, a railroad station or harbor. Passenger air service is only a portion of the business activity, which contributes to the airport's total economic benefit to its community. Six types of business activities have been identified as contributing to an airport's total economic effect. These six types of activities are described below.

7.1 Airport-Based Economic Activities

In addition to people employed directly, airports support a variety of other aviation-related jobs. These jobs include airlines (passenger and cargo); terminal operations such as security, building maintenance and facility management; airline support services like catering and aircraft fueling and maintenance; courier and freight delivery services; and ground transportation such as taxi, car rental, limousine, and public transportation.

7.2 Airport-Dependent Businesses

Electronic commerce, globalization and evolving manufacturing processes have caused businesses to become more dependent on time-sensitive service for delivery of goods and services. Manufacturing, professional service, trade, education, and government have become reliant on the availability of affordable and dependable air service. Hotels, motels, restaurants

and retail establishments also benefit from visitors arriving via commercial service and general aviation airports.

Easy access for out-of-town clients, travel for sales representatives, and air cargo are examples of business needs met by regional airports. Recent surveys have indicated that some businesses report that up to 50 percent of sales are dependent on nearby air service.

General aviation also provides benefits to Michigan's businesses. Business aviation is one of the fastest growing facets of general aviation. Companies and individuals use aircraft as a tool to improve efficiency and productivity. The business/corporate component of general aviation use is one that has experienced significant recent growth. Increased personnel productivity is one of the most important benefits of using business aircraft. Companies flying general aviation aircraft for business have control of their travel. Itineraries can be changed as needed, and the aircraft can fly into destinations not served by scheduled airlines.

The National Business Aviation Association (NBAA) *Business Aviation Fact Book* indicates that slightly more than 75 percent of all Fortune 500 businesses operate general aviation aircraft and 92 of the Fortune 100 companies operate general aviation aircraft. Business use of general aviation aircraft ranges from small, single-engine aircraft rentals to multiple aircraft corporate fleets supported by dedicated flight crews and mechanics. General aviation aircraft use allows employers to transport personnel and air cargo efficiently. Businesses often use general aviation aircraft to link multiple office locations and reach existing and potential customers. Business aircraft use by smaller companies has escalated as various chartering, leasing, time-sharing, interchange agreements, partnerships and management contracts have emerged. Businesses and corporations have increasingly employed business aircraft in their operations. NBAA statistics show approximately 60 percent overall growth in both the number of companies operating general aviation aircraft and the number of aircraft operated by them for business use.

7.3 Off-Airport Businesses Providing Goods and Services

Suppliers to airport businesses, suppliers to off-airport businesses that serve travelers, and suppliers to airport-dependent businesses are other categories of economic activity related to aviation. Airport businesses create the need for goods and services such as printing/publishing; banking, insurance, accounting, and technical services; off-site parking for airport employees; food products for airport restaurants; wholesale merchandise sold in airport stores; and furniture and office equipment.

Airports employ a variety of skilled and well-paid individuals. Airline employees, airport administrators and service workers, police officers and firefighters, air traffic controllers, aircraft mechanics, pilots, and flight instructors are all employed at different airports in varying numbers. Studies indicate that approximately 40 percent of their income is spent within the region on housing, retail items, services and investments.

7.4 Tax Revenues Generated for the State and Local Economies

The businesses and associated jobs related to airports generate revenue for state and local governments. These revenues include the following:

- Airport fees such as landing, storage, fuel flowage fees and leases;
- The state aviation fuel tax is currently three cents per gallon. The law provides a 50 percent refund of this tax for interstate airline flights. The fuel tax only can be used for aviation purposes.
- State sales taxes on sales to private-sector airport tenants, airport-dependent businesses, travelers and on-airport employees;
- Local property taxes generated by business growth supported by the airport and its users and suppliers;
- Miscellaneous local and state taxes and fees.

7.5 Summary of Economic Benefits

An airport is a significant economic engine for its region. Airports support a variety of aviation activities that employ thousands of persons and create millions of dollars in economic benefits. Businesses throughout the state also depend on airports for the movement of goods and personnel. Benefits associated with airports include direct and indirect jobs, wages and expenditures. They also include the effects rippling through the community, enhancing economic activity far from the airport itself. Economic benefits also include expenditures made by those transient passengers who use the airport but spend their money throughout the region. Airports also create savings in time and money as a result of the travel efficiencies they create. Economic benefits also include the intangible effect the airport has on business decisions to locate or remain in a specific area. Finally, and somewhat less tangible are "quality of life benefits" provided by an airport. Examples include police and firefighting support, search and rescue, and recreation. The close proximity of reliable, efficient air service is cited by many as important when choosing where to reside.

Chapter 8. Safety and Security Issues

Among the first responses to the terrorist attacks was sweeping new federal legislation directed at the nation's air carrier airports. Known as the Aviation and Transportation Security Act, this well-publicized legislation sets forth many requirements for airlines and air carrier airports. It addresses things such as baggage screening, airport security personnel, flight deck security and deployment of air marshals. It also established an entirely new federal agency, the Transportation Security Administration.

General aviation airports and operators initially were not affected by these new federal security measures. However, many states have adopted plans to include general aviation airports in

security planning. In many cases, states have taken this action in the hope that additional federal measures would not be forthcoming.

Michigan's approach has been to assist operators of general aviation airports in adopting security plans, which are appropriate for their level of activity. It is recognized that airports of varying size will have different security needs.

8.1 MAC Security Document

In November 2001, the Michigan Aeronautics Commission (MAC) adopted a resolution requiring all general utility airports to prepare an airport security document. The resolution also included language encouraging (but not requiring) basic utility airports to adopt similar plans. Of Michigan's public-use, general aviation airports, approximately 88 are general utility, and the remainders are basic utility airports.

By design, the resolution gives individual operators great latitude in developing their security plans. It does not, for example, mandate any specific elements to be included. Furthermore, the MDOT will neither approve nor disapprove the plans.

8.2 TSA Policies and Regulations

The Transportation Security Administration (TSA), an agency within the Department of Homeland Security, has to date concentrated the vast majority of its resources on screening passengers at air carrier airports. MDOT has no active involvement in TSA operations at air carrier airports, although infrastructure needs may be met through the AIP. However, TSA has begun to address security at general aviation airports as well. Perhaps the most significant initiatives affecting general aviation airports is TSA's rule requiring security training for employees of flight schools.

In accordance with 49 CFR 1552, Flight Schools and Flight Training Centers are required to provide security awareness training to their employees. Under this regulation, Flight School and Flight Training Center operators have two choices: they can develop their own in-house training program in accordance with the guidelines set forth in 49 CFR 1552, or they may use the TSA program to meet the mandate. This program is a pro-active response from TSA to offer an alternative to each school having to develop their own program. Regardless of which method the operator chooses, both programs must meet the established mandates outlined in 49 CFR 1552.

8.3 MDOT Emergency Management Policy

The horrific attacks on the United States of September 11, 2001 have had widespread effect on life. Arguably, no profession or industry has been affected as much as aviation in the aftermath of the attacks. The response by federal and state government has resulted in numerous new regulations, procedures and restrictions that were beyond imagination prior to that time. Indeed, it is not an exaggeration to say that the aviation industry will never be the same.

8.4 Best Practices

As expected, many airport operators have turned to the MDOT for guidance in preparing their security plans. To that end, MDOT has developed a suggested list of best practices, which should be considered. These are as follows:

- Access to the aircraft operations area, or "air side," of the airport is controlled. Only individuals with a legitimate need should be able to gain access.
- Owners of vehicles parked on the premises (especially for an extended period) are known.
- Gates, which provide access to aircraft operating areas, are kept closed and locked. The distribution of keys, entry codes or access cards is controlled.
- The airport perimeter is clearly marked with appropriate signs.
- The identity of charter customers, flight students and aircraft renters is established.
- Strangers are identified and challenged.
- A log of transient aircraft is kept and retained for a reasonable period of time.
- Hangar tenants and contents are known. This is especially important if the airport allows tenants to sublease hangars.
- Aircraft are locked or otherwise immobilized when not attended. Propeller locks, throttle locks, or locking chocks are effective options.
- Access to aircraft keys is controlled.
- A communications plan is established. This should involve airport management, tenants, renters and other regular users. MDOT and local law enforcement agencies should have 24-hour contact information for the manager, assistant manager, and other designated individuals.
- Procedures for closing the airport are established. This should include a means of closing the airport for departures while still allowing aircraft to land if necessary. It is strongly recommended that the runway not be physically blocked.
- Procedures for notifying tenants and local pilots of airspace closures or other restrictions are established.
- Airport is patrolled by local law enforcement during hours of non-attendance.

Local law enforcement personnel are involved in developing and implementing the security plan. Ideally, a mutual letter of understanding should be developed which outlines each party's role in maintaining airport security.

8.5 Emergency Notification Plan

For the first time in memory, the events of September 11 prompted the FAA to shut down the National Airspace System. Since that total shutdown, many other localized airspace restrictions

have been issued. Some of these (the restricted areas near nuclear power plants, for instance) have been issued on very short notice. A constant reminder exists of the possibility of new terrorist attacks, and this reminder remains very real. This could mean the closure of the airspace again or other measures to safeguard the air transportation system. In addition to restricting airspace, one possible measure might be the closure of some, or all, airports. MDOT has been asked by the FAA to assist with notification in such an event.

8.6 Flight Schools – Background Checks

The latest and perhaps most controversial, regulatory response has been an amendment to the State Aeronautics Code, which requires background checks for all students enrolling in Michigan flight schools. Senate Bills 934 and 1006 were signed by the governor on May 1, 2002. Taking immediate effect, the legislation requires that students enrolling in state-licensed flight schools submit their fingerprints to the state police for the purpose of performing a criminal background check. Individuals with a violent or other felony conviction within the preceding seven years may not receive flight training at Michigan flight schools. A felony is defined as a violation of a penal law of this state, another state or the United States for which the offender, upon conviction, may be punished by death or imprisonment for more than one year or an offense expressly designated by law to be a felony.

Students may begin flight training pending the results of the background check if they sign a statement certifying they have no violent felony convictions. Additionally, schools may share the results of background checks with other schools, eliminating the need for an additional check if the student transfers.

MDOT was not involved in drafting this legislation and did not support it. As expected, however, MDOT has become the focal point for questions and interpretation of the law. A package has been developed which includes detailed instructions and answers to frequently asked questions. This is available upon request.

Chapter 9. Performance Measures

One of the goals of the *2000 MASP* was to assess how the system was performing. This was accomplished by grouping the airports into various tiers, establishing performance goals, and then benchmarking each tier of airports. Detailed information on this process is available in the *2000 MASP.* Key elements are discussed below.

9.1 General and Commercial Aviation

All airports, following a rigorous analytical process, were assigned to one of three tiers in the *2000 MASP* based on their contribution to state goals. Specific performance measures are defined in detail in the *2000 MASP*. Tier 1 airports respond to critical/essential state airport system goals. These airports should be developed to their full and appropriate level. Tier 2 airports complement the essential/critical state airport system and/or respond to local

community needs. Focus at these airports is on maintaining infrastructure with a lesser emphasis on facility expansion. Tier 3 airports duplicate services provided by other airports and/or respond to specific needs of individuals and/or small businesses.

A series of system goals were identified as an outcome of an issue identification process. The system goals identified airports that would provide the following:

- Serve significant population centers;
- Serve significant business centers;
- Serve significant tourism/convention centers;
- Provide access to the general population;
- Provide adequate land area coverage;
- Provide adequate regional capacity; and
- Serve seasonally isolated areas.

Each of these system goals was subjected to a rigorous analytical process that resulted in the establishment of system standards and the designation of airports for inclusion in either Tier 1 or Tier 2. Airports not designated to either Tier 1 or Tier 2 was assigned to Tier 3.

9.2 Gap Analysis

The Gap Analysis is an annual process conducted by MDOT to quantify commercial passenger service levels at Michigan's air carrier airports. The report provides an airport level comparison of the scheduled flights listed in the July edition of the Official Airline Guide versus passenger enplanement totals for the same month.

To account for schedule irregularities (i.e. shared or repositioning flights), the total seat count is adjusted prior to arriving at a final gap measurement for each airport. The end result is a ratio depicting the passengers enplaned versus available seats. Higher ratios may indicate airports with a need for additional air service. Thus, the process provides guidance for MDOT in determining where to focus air service development efforts.

For detailed Gap Analysis data, please contact the Aviation Services Division, MDOT.

9.3 Other Performance Measures

Facility goals were developed that identify the basic components of an airport for each tier. Facility goals were established for:

- Primary runway system;
- Pavement condition;
- All-weather access;
- Year round access;

- Basic pilot and aircraft services;
- Airport zoning;
- Navigational aids;
- Instrument approaches; and
- Surface areas.

All airports were evaluated to determine whether they currently meet each facility standard, and the extent and cost associated with responding to deficiencies through the year 2020.

The cost associated with retiring system deficiencies is $115 million per year (through 2020) in year 2000 dollars. Because this exceeds expected programming levels, an aviation investment strategy will be developed to help determine project selection priorities.

Chapter 10. Integration

For the integrated *MI Transportation Plan*, the information in this technical report is further integrated with the other 16 reports in the *Integration Technical Report*, carrying forward into the *Conditions and Performance Technical Report* and the *Corridors and International Borders Report*. The technical reports can be categorized into two types: (1) Reports about transportation supply (assets, infrastructure, services and resources) and (2) reports about transportation demand (users, markets, travel segments and industries utilizing freight). This technical report addresses the status of transportation supply for aviation infrastructure and services in Michigan.

Integrating Aviation into an overall transportation plan supporting Michigan's economic vitality entails:

- Structuring policy and decisions for the aviation system within the context of key industry and travel segments using the system;
- Ensuring the system supports key aviation-dependent activities;
- Identifying and remedying any key barriers to effective utilization of aviation; and
- Implementing any aviation activities that may serve to catalyze economic vitality.

10.1 Aviation Segments

This report has explored how aviation is important for both Michigan's industrial and personal transportation needs. Michigan's aviation sector may be characterized in terms of different segments (or groups) of system users that vary by the way in which they utilize the system, and the distinctive economic activities made by the system. **Chapter 2** of this report describes how aviation programs in Michigan are targeted to different users throughout the state. Some key segments utilizing aviation in Michigan include:

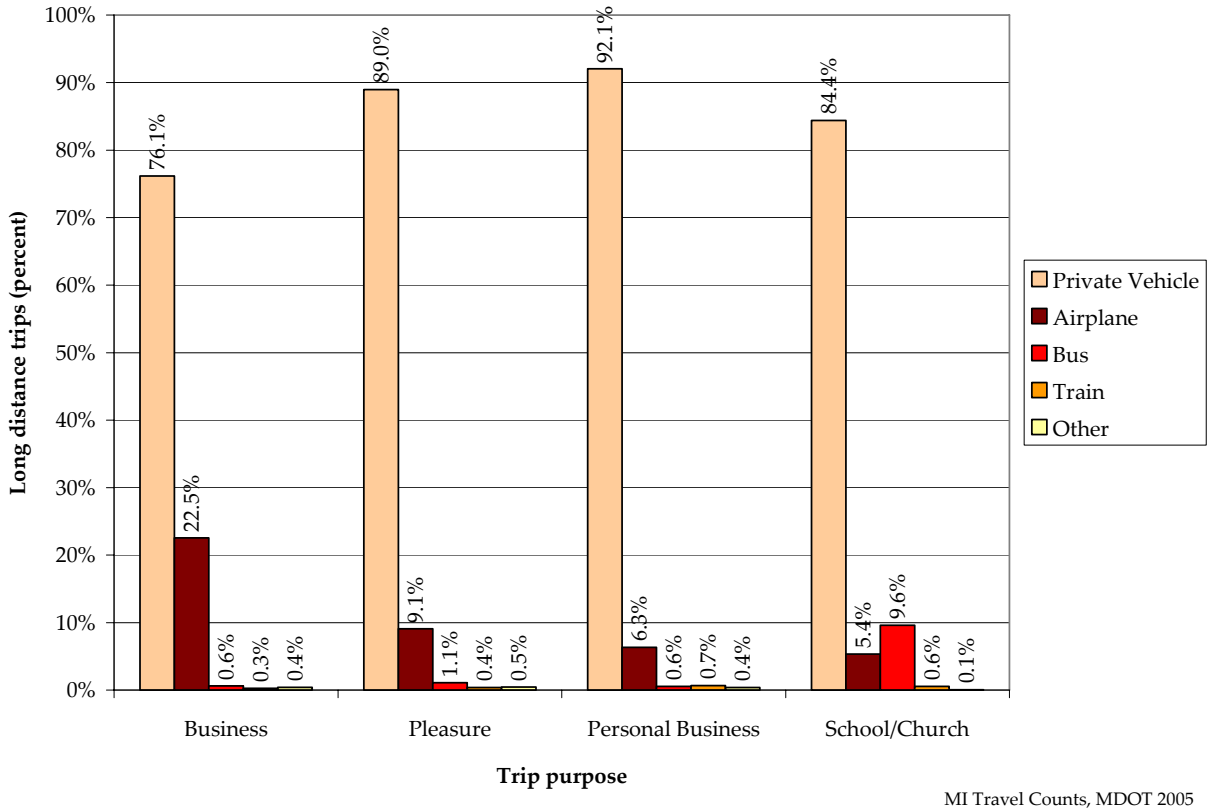
10.1.1 Passenger Segments

Air travel passengers travel for the purposes of business, recreation and personal business. The *Travel Characteristics Technical Report* describes the role of air transportation for Michigan's long-distance travelers (those making trips of 100 miles or more). The report finds that approximately 10 percent of these distance trips are made by airplane.

10.1.2 Business Travelers

Aviation factors more prominently in business travel than other purposes, accounting for twice the share of business trips than for other trips. **Figure 4,** from the *Travel Characteristics Technical Report*, shows the modal breakdown of trips by purpose for trips of 100 miles or more originating in Michigan.

Figure 4: Modal Shares by Trip Purpose for Trips of 100 Miles or More Originating in Michigan



MI Travel Counts, MDOT 2005

In addition to business travelers shown in **Figure 4**, originating in Michigan, it should also be noted that business passenger aviation makes services and expertise from throughout the world available to Michigan's industry sectors, supporting the vitality of Michigan business. Business travel also is a key market for airport-based economic activities and off-airport provided goods and services described in **Chapter 6** of this report.

10.1.3 Recreational Passengers

In addition to the 17 Michigan airports having scheduled passenger services, there are 219 other airports available for public use by general aviation aircraft. Recreational passengers, whether traveling by commercial or personal aircraft, represent an important segment for Michigan's economy. Air access to Michigan's many recreational destinations including islands and remote areas is a key amenity contributing to the quality of life for many of Michigan's workers, families and retirees.

The accessibility provided by the aviation system is an effective tool for tourism officials marketing Michigan as a destination for travelers from worldwide locations. Air access too is essential for Michigan residents seeking recreational opportunities beyond the state borders. The Michigan airport system, with its 236 open to the public airports provides access for travel to destinations worldwide. Scheduled passenger services at Michigan airports provide convenient access to major airline hubs (in Detroit, Chicago, Minneapolis, Cincinnati, and Atlanta) and at some airports, non-stop direct flights to high demand destinations (e.g., New York, Las Vegas, Orlando). Michigan's integrated plan provides reasonable access to air transportation networks to and from areas where recreational markets are concentrated.

10.1.4 Regional Passengers

Chapter 2 describes the role of both regional services (transporting passengers from small and medium sized communities to major airports), as well as on-demand passenger and air taxi services. Users of these services represent both business and recreational travelers who would otherwise lack access to the air transportation system. Enabling regional services to connect with major hub services with minimal layovers is an important consideration for these aviation passengers.

10.1.5 Charter and On-Demand Passengers (Including Air Taxi)

Air taxi and charter services transport corporate and business travelers providing very high value and time-sensitive services from Michigan's businesses, or to Michigan's markets. Air taxi and charter services make these services accessible in remote markets where such services would not otherwise be available. Consumers use these flight services to participate in high value consumer markets (such as hunting, fishing or shopping for high value merchandise or conducting various business operations).

10.1.6 Shipper Segments

Shippers dealing in non-time-sensitive airborne commodities often utilize the same carriers as passenger service, with air cargo in the belly compartments of the passenger aircraft. This segment also utilizes large cargo-only carriers, which are most likely to operate from major metropolitan airports. Often these cargo carriers provide service subject to terms of contracts entered into with the shipper.

Many general aviation airports are served by charter or on-demand air carriers, often addressing a particular air cargo need of a distinct firm or industry. These shippers comprise a

different segment of air-cargo demand Many times, there is a contract between the air carrier and the shipper, setting forth terms of service.

In addition, another segment of demand are the shippers of small package freight and correspondence utilizing cargo airlines collecting this freight for transport to larger metropolitan airports. At these larger airports, these shipments (coming from throughout Michigan) are transloaded into larger aircraft for continued movement through the national air transportation system to destination.

10.1.7 Charter and On-Demand Shippers

Ad hoc and charter cargo shippers deal in extremely time-sensitive and valuable or perishable products. These services provide an important safety valve for just in time and other temporarily tight supply chains; and are often used as a stop-gap measure when equipment or other supplies require repairs or augmentations. These users tend to be engaging in business to business transactions; hence consumer markets are not a major user of this type of service.

Charter and on-demand shippers do not always require specialized facilities. Proximity to trade centers, production plants, or end users may prompt a shipper to use a facility. Adequate airport facilities to support this use may include ramp space to offload freight, suitable instrumentation to allow an aircraft to land during limited visibility, and suitable runway length for the specific aircraft and conditions.

10.2 Aviation Dependent Activities

The above segments engage in activities which contribute directly to Michigan's economic performance. In order to support the state's economic vitality, Michigan's transportation system must ensure the aviation system provides seamless and complete access to key activities. The provision of high value economic services, business hospitality, recreation, and just in time production (and other supply chain activities) are directly supported by Michigan's aviation system.

10.2.1 High Value Economic Services

High value economic services are professional services either provided by Michigan firms to the national economy or consumed in Michigan from firms and persons residing outside of the state. They include activities such as an attorney traveling to Michigan to represent a client in an important case, an engineer from Michigan traveling to China to inspect machinery or instructors from the University of Michigan attending a sabbatical overseas. These activities often represent scarce concentrations of knowledge and expertise sufficient to create value in Michigan's economy exceeding the cost of travel.

As Michigan's economy becomes increasingly service oriented (as described in the *Socioeconomic Technical Report*); these activities will continue to play a vital role in the state's economy. Consequently, access to the air transportation system for business travelers to and from locations sensitive to high-value services is a key transportation issue in the *MI Transportation Plan.*

10.2.2 Business Hospitality

Business hospitality activities include conventions, conferences, political gatherings and other major events attracting visitors to Michigan each year for business. These activities differ from the high value economic services described above in the way they support the state's economy. While the high value services lead directly to value added activity occurring in Michigan (or provided by Michigan business); business hospitality provides the market for Michigan to provide hospitality services to visitors. **Sections 6.1** and **6.2** of this report detail the nature and importance of these aviation dependent activities for Michigan's economy.

10.2.3 Recreation

Recreational activities supported by aviation include activities both within and outside of Michigan. The *Travel Characteristics Technical Report* highlighted the desire for state residents to travel to out-of-state locations for recreational purposes. Air travel provides affordable, rapid, and safe access to recreational destinations. This is viewed as a key amenity which contributes to the quality of life necessary to support Michigan's workforce, families and retirees.

When Michigan is an air destination for visitors arriving from out-of-state, a significant economic impact can be realized. These Michigan-destined travelers support the many aviation dependent businesses found in Michigan's economy.

10.2.4 Supply Chain Activities

Time-sensitive (just in time) manufacturing plays an increasing role in the global economy. Supply chain management strategies such as Vendor Managed Inventory, Cross Docking, and Electronic Data Interchange from Point of Sale Data make the flexibility and responsiveness of air transport an increasingly important catalyst for performance in many industries. Both the reliability and flexibility of air cargo service, whether scheduled or charter is especially important in areas where industries are employing the above mentioned supply chain strategies.

10.3 Opportunities and Performance Barriers

10.3.1 Performance Barriers to Economic Activities

10.3.1.1 Inadequate facilities may result from legislative funding changes

Chapter 6 of this report discusses potential reductions in funding for the EAS (Essential air service). This may jeopardize services in some areas of Michigan, where a small or general aviation airport is the only link to the nation's aviation system. If small airports in remote areas have inadequate usage to maintain service, then the economic segments and activities described in **section 10.1** and **10.2** will be more difficult to sustain in the long-term.

10.3.1.2 Remote areas highly dependent on regional and complementary services

In addition to vulnerability to changes in funding levels from aviation programs, remote and outlying areas of Michigan are also dependent on regional and complementary

services. These include regional services operated by major carriers (connecting the smaller airport to hub airports), and also complementary services such as rental car, parking and shuttle services to lodging and other modes. The sporadic and sparse nature of many of these markets makes it difficult for vendors to consistently operate and deliver these regional and complementary services, leaving rural areas and areas with smaller aviation markets vulnerable to changes in carrier and vendor operations.

10.3.1.3 Carrier operational and management challenges

Because the airline industry is known to be ever-changing operational issues such as labor disputes, technical and equipment fleet ages, safety and security requirements and financial challenges for carriers all pose potential barriers to aviation-dependent activities in Michigan's economy.

10.3.2 Opportunities

10.3.2.1 Airline Recruitment and Retention

The recruitment and retention of carriers to small and medium sized airports is a key success factor for ensuring service will be available in these areas. This is dependent on having adequate infrastructure to efficiently operate a regional or small-scale aviation operation, as well as demonstrating that these areas have sufficient demand to sustain such services. Strong relationships in which airlines offering regional services have an understanding of Michigan's more remote aviation markets can trigger a stable and sustainable aviation sector to support Michigan's economy.

10.3.2.2 Co-location of Air Cargo with Other Facility Types

Some states have experimented with geographically agglomerated industry clusters – or groups of businesses that provide complementary inputs and services into the same supply chain. These concepts have often been referred to as freight villages or global transparks. While their success has been mixed, the concept of an air cargo facility at a center for co-located manufacturing establishments engaging in the strategies discussed in **Section 10.2.4** may serve as an opportunity for manufacturing and service activities in Michigan's economy.

10.4 Integrating Aviation

Integrating aviation into a statewide transportation vision entails providing infrastructure appropriate for Michigan's aviation system, local communities, and aviation-dependent businesses. Linkages to highway, transit and rail services can be critical at major aviation facilities. At smaller facilities, the need for multi-modal infrastructure is dependent on market conditions. It is important to develop aviation system priorities based on the localized needs of business travelers, recreational travelers, regional vs. hub markets and shippers and manufacturers with time-sensitive operations.

With uncertainty surrounding existing funding sources for aviation infrastructure planning may entail difficult trade-offs regarding aviation segments and their activities. An integrated approach must seek to understand these trade-offs within the context of how these segments and activities fit into Michigan's larger economic context.

Active engagement of the industry sectors most dependent on aviation carriers, third party logistics, and technology providers is a key success factor for addressing aviation in an integrated fashion. Land use decisions, localized roadway improvement decisions, transit and other complementary services are also important aspects of transportation planning linked to aviation.

Appendix A - Commercial Service Airports

	Commercial Service Airports[1]							
Characteristics	***Ironwood***	***Hancock***	***Iron Mountain***	***Marquette***	***Escanaba***	***Sault Ste. Marie***	***Pellston***	***Alpena***
Population (60-minute Drive)	22,702	30,001	46,831	62,709	45,333	45,456	110,078	48,246
# of Carriers	1	1	1	3	1	1	1	1
Carriers (Share)	Midwest Airlines (100%)	Northwest (100%)	Midwest Airlines (100%)	Northwest (63.4%) American (18.7%) Midwest Airlines (18%)	Midwest Airlines (100%)	Northwest (100%)	Northwest (100%)	Northwest (100%)
Daily Departures	2	3	3	11	3	2	3	4*
Nonstop Destinations	Rhinelander	Minneapolis	Milwaukee Marquette	Chicago O'Hare Detroit Green Bay Milwaukee Minneapolis Traverse City	Iron Mountain Milwaukee	Alpena	Detroit	Detroit Sault Ste. Marie
Domestic and Int'l Daily Traffic Each Way	11.0	77.8	25.4	163.5	31.0	39.5	104.3	23.8

[1] Detroit Metropolitan Airport (large hub) and Willow Run (cargo only) Airport not included herein.

Commercial Service Airports, Continued								
Characteristics	***Ironwood***	***Hancock***	***Iron Mountain***	***Marquette***	***Escanaba***	***Sault Ste. Marie***	***Pellston***	***Alpena***
Top 10 Destinations	Rhinelander Milwaukee Lansing Washington DCA Flint Denver Phoenix Dallas Boston Las Vegas	Detroit Minneapolis Phoenix Portland, OR Las Vegas Orlando Denver Los Angeles Tampa Seattle	Marquette Escanaba Milwaukee Phoenix Denver Washington DCA Lansing Orlando Tampa Las Vegas	Detroit Orlando Las Vegas Chicago O'Hare Tampa Milwaukee Phoenix Denver Los Angeles	Milwaukee Orlando Iron Mountain Phoenix Denver Dallas Washington DCA Atlanta Tampa Las Vegas	Detroit Orlando Las Vegas Phoenix Tampa Los Angeles Chicago O'Hare Seattle Washington DCA Dallas	Detroit Washington DCA New York LGA Los Angeles Tampa Newark San Francisco Phoenix Boston Dallas	Detroit Washington DCA Orlando Phoenix Tampa Dallas Las Vegas Houston IAH New York LGA Atlanta

Commercial Service Airports, Continued								
Characteristics	***Traverse City***	***Manistee***	***Muskegon***	***Grand Rapids***	***Kalamazoo***	***Lansing***	***Saginaw***	***Flint***
Population (60-minute Drive)	155,382	96,985	1,001,247	1,119,379	770,415	905,168	553,959	2,345,887
# of Carriers	3	1	2*	6	4	4	2	6
Carriers (Share)	Northwest (2%) United (19.8%) American (15.5%)	Midwest Airlines (100%)	Northwest (68.2%) Midwest Airlines (31.8%)	Northwest (43%) Delta (15.4%) United (13.8%) American (10%) Continental (6.9%) Midwest Airlines (2.9%)	Northwest (54.8%) Delta (17.9%) American (16.2%) United (10.9%)	Northwest (58.4%) United (11.4%) Delta (8%) Allegiant (7.6%)	Northwest (78.8%) United (21.2%)	Northwest (43.9%) Air Tran (29.9%) Delta (13.3%) Midwest Airlines (1.9%) Continental (1.5%) American
Daily Departures	12	2	8	55	19	18	11	32

Commercial Service Airports, Continued								
Characteristics	***Traverse City***	***Manistee***	***Muskegon***	***Grand Rapids***	***Kalamazoo***	***Lansing***	***Saginaw***	***Flint***
Nonstop Destinations	Detroit Marquette Minneapolis Chicago O'Hare	Muskegon	Detroit Manistee Milwaukee	Atlanta Cleveland Cincinnati Washington DCA Dallas Detroit Newark Flint Houston IAH New York LGA Memphis Milwaukee Minneapolis Chicago O'Hare	Atlanta Cincinnati Detroit Minneapolis Chicago O'Hare	Atlanta Cincinnati Washington DCA Detroit Las Vegas Minneapolis Chicago O'Hare Orlando	Detroit Minneapolis Chicago O'Hare	Atlanta Cleveland Cincinnati Detroit Grand Rapids Las Vegas Orlando Milwaukee Minneapolis Chicago O'Hare Ft Myers Tampa
Domestic and Int'l Daily Traffic Each Way	558.5	8.4	99.8	2919.9	630.4	923.6	561.6	1575.6
Top 10 Destinations	Chicago O'Hare Minneapolis Denver Orlando New York LGA Detroit Las Vegas Los Angeles Tampa Washington DCA	Muskegon Milwaukee Los Angeles Denver Dallas Orlando Minneapolis Kansas City Phoenix Tampa	Milwaukee Orlando Phoenix Manistee Denver Detroit Ft Myers Las Vegas Dallas Washington DCA	Orlando Las Vegas Tampa Minneapolis Los Angeles Denver Dallas Atlanta Phoenix San Francisco	Washington DCA Orlando Minneapolis New York LGA Atlanta Tampa Las Vegas Chicago O'Hare Newark Dallas	Washington IAD Las Vegas Chicago O'Hare Orlando Denver Minneapolis Tampa Atlanta Washington DCA Los Angeles	Chicago O'Hare Las Vegas Minneapolis Denver Orlando Phoenix New York LGA Los Angeles Dallas Washington DCA	Orlando Atlanta Tampa Ft Lauderdale Dallas Las Vegas Minneapolis Ft Myers Los Angeles Chicago Midway

Appendix B – Airports with an ILS

Airports with an ILS[2]	
Airport Name	***# of Approaches***
Alpena	1
Battle Creek	1
Benton Harbor	1
Cadillac	1
Detroit, Metro	8
Detroit, Willow Run	2
Detroit, Young	2
Escanaba	1
Flint	2
Gaylord	1
Grand Rapids	3
Hancock	1
Holland, Tulip	1
Howell	Planned
Iron Mountain	1
Ironwood	1
Jackson	1
Kalamazoo	1
Lansing	2
Manistee	1
Marquette	1
Menominee	1
Muskegon	2
Oscoda	1
Pellston	1
Pontiac	1
Port Huron	1
Saginaw, MBS	2
Saginaw, Browne	Planned
Sault Ste. Marie, Chip.	1
Traverse City	1

[2] All Federally Owned

Appendix B – Airports with a GPS Approach

Airports with a GPS Approach[3]	
Airport Name	*# of Approaches*
Adrian	2
Alma	3
Ann Arbor	2
Battle Creek	1
Bay City	1
Bellaire	1
Big Rapids	1
Cadillac	1
Charlevoix	2
Cheboygan, County	2
Coldwater	1
Davison	2
Detroit, Metro	8
Detroit, Willow	8
Drummond Island	2
Flint	4
Frankfort	2
Fremont	2
Grand Haven	2
Grand Rapids	6
Grayling	1
Greenville	2
Grosse Ile	1
Hancock	3
Harbor Springs	2
Holland, Tulip	2

Airports with a GPS Approach	
Airport Name	*# of Approaches*
Houghton Lake	1
Howell	2
Ionia	1
Kalamazoo	2
Lakeview	2
Linden	2
Ludington	1
Mackinac Island	1
Marlette	2
Marquette	1
Mason	1
Menominee	1
Midland	2
Muskegon	4
Owosso	2
Rogers City	2
Romeo	1
Saginaw, MBS	4
Saginaw, Browne	2
St. Ignace	2
Sault Ste Marie, Chip.	4
Sturgis	1
Three Rivers	1
Traverse City	1
Troy, Oakland/Troy	1

[3] No ground based equipment.

Appendix B – Airports with an AWOS

Airports with an AWOS	
Airport	*Type*
Adrian	Fed ASOS
Alma	State AWOS
Alpena	Fed ASOS
Ann Arbor	Fed ASOS
Bad Axe	State AWOS
Battle Creek	Fed ASOS
Bellaire	State AWOS
Beaver Island	State AWOS
Benton Harbor	Fed ASOS
Big Rapids	State AWOS
Cadillac	State AWOS
Caro	State AWOS
Charlevoix	State AWOS
Charlotte	State AWOS
Cheboygan County	State AWOS
Coldwater	State AWOS
Detroit, Metro	Fed ASOS
Detroit, Willow	Fed ASOS
Detroit, Young	Fed ASOS
Drummond Island	State AWOS
Escanaba	Fed AWOS
Flint	Fed ASOS
Frankfort	State AWOS
Gaylord	Fed ASOS
Grand Rapids	Fed ASOS
Grayling	State AWOS
Grosse Ile	State AWOS
Hancock	Fed ASOS
Harbor Springs	State AWOS
Hillsdale	State AWOS
Holland, Tulip	Fed ASOS
Houghton Lake	Fed ASOS
Howell	State AWOS

Airports with an AWOS	
Airport	*Type*
Iron Mountain	Fed ASOS
Ironwood	Fed AWOS
Jackson	Fed ASOS
Kalamazoo	Fed ASOS
Lambertville	State AWOS
Lansing	Fed ASOS
Ludington	State AWOS
Mackinac Island	State AWOS
Manistee	Fed AWOS
Manistique	State AWOS
Marquette	State AWOS
Marshall	State AWOS
Mason	State AWOS
Menominee	Fed AWOS
Monroe	State AWOS
Mt. Pleasant	State AWOS
Muskegon	Fed ASOS
Newberry	State AWOS
Oscoda	State AWOS
Owosso	State AWOS
Pellston	Fed ASOS
Pontiac	Fed ASOS
Port Huron	State AWOS
Rogers City	State AWOS
Saginaw, MBS	Fed ASOS
Saginaw, Browne	State AWOS
Sault Ste Marie, Chip.	Fed AWOS
Sault Ste Marie, City	Fed ASOS
South Haven	State AWOS
Sturgis	State AWOS
Three Rivers	State AWOS
Traverse City	Fed ASOS
Troy, Oakland/Troy	State AWOS

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